THYMELAEA PASSERINA (THYMELAEACEAE) IN SOUTH DAKOTA

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ABSTRACT

Thymelaea passerina (L.) Cosson & J. Germain (Thymelaeaceae) is reported as an addition to the flora of South Dakota. A description of the species and information for vouchered specimens are provided.

KEY WORDS: *Thymelaea passerina*, Thymelaeaceae, naturalized, Conata Basin, South Dakota, invasive species

RESUMEN

Thymelaea passerina (L.) Cosson & J. Germain (Thymelaeaceae) se presenta como adición a la flora de Dakota del Sur. Se describe la especie y se incluye información sobre los especímenes documentados.

INTRODUCTION

In the summer of 2008, the author discovered a population of *Thymelaea passerina* (common name, spurge flax), a species thought to be unknown from the state, to be well established on a disturbed site in Conata Basin, Pennington County, South Dakota. The population of ca. 1000 individual plants scattered throughout several acres of Conata Basin clearly indicates a potential for naturalization. Although no published record of *T. passerina* in South Dakota exists, a later search through herbarium records revealed a collection made in 1989 by Craig Freeman and Ralph E. Brooks in Tripp County. A formal description of the species and new information about its known distribution in the state follow.

Original voucher specimen: **U.S.A. SOUTH DAKOTA. Tripp Co.:** T97S R76E S4 NW ¼, 7 mi W of Colome, level to slightly rolling subirrigated sand prairie, plants common along fence line at N end of prairie next to road, 11 Jul 1989, *R.E. Brooks 19582 & C. Freeman* (KANU, KS, U.S. 298531).

Recent voucher specimen: **U.S.A. SOUTH DAKOTA. Pennington Co.:** T3S R16E S23. 43.7707000 N; -102.1685000 W (Datum = NAD83), Buffalo Gap National Grassland, Conata Basin, ca. 14 mi due S of Wall and 0.5–1 mi E of Conata Basin Road, elev. 2570 ft, prairie dog town, soils are deep clay overlain with gravel and cobble, area evidences recent revegetation/recovery from drought and heavy use, ca. 1000 plants scattered over several acres, 4 Sep 2008, *Grace M. Kostel 12666* (BHSC, SD, U.S. 41571).

MORPHOLOGY

Thymelaea passerina is a taprooted herbaceous annual to 55–60 cm tall and characteristically slender, wiry and erect. Spurge flax grows as one main stem or, more commonly, branches from the upper portion of the main stem. Leaves are alternate and sessile, leathery, and jointed at a yellow cartilaginous base; blades are small, narrow and linear, 8–14 mm long, progressively smaller upward along the stems. The flowers are perfect, greenish, tubular and axillary, 2–3 mm long, with 4 sepals, no petals, and 8 stamens (in 2 whorls of 4). Below each flower, two very small bracts arise from a tuft of tiny white hairs. The fruit is one-seeded, the enclosed seed round, brown to black and 2–3 mm long (McGregor 1986; Kaul et al. 2006).

DISCUSSION

Thymelaea passerina was first reported in the United States by Pohl in 1955. *Thymelaea passerina* is native to Northern Africa, Europe and Asia where it is considered a common weed of dry soils and grain fields (Pohl

1955; Wofford & De Selm 1988). It is also found in central Russia, Australia and North America. In the U.S., it is recorded from Iowa and Nebraska (Pohl 1955), Illinois (Mohlenbrock & Ladd 1978), Wisconsin (Harriman 1979), Kansas (McGregor 1986), Ohio (Vincent & Thieret 1987), Mississippi (Wofford & De Selm 1988), Alabama (Webb et al. 1997), and Texas (Holmes et al. 2000). In Washington state *T. passerina* was identified in 1996 in Okanogan County and was subsequently listed as a Class A noxious weed (USDA NRCS 1999).

Introduction to Tripp County may have been facilitated through agricultural activity associated with grazing and feeding cattle, e.g., introduced as seed in hay. We can only speculate as to how *T. passerina* may have been introduced to Conata Basin. Several years of activity associated with the recreational killing of prairie dogs (*Cynomys ludoviciana*) and the actions associated with the reintroduction of black footed ferrets (*Mustela nigripes*) by the U.S. Fish and Wildlife Service (USFWS) and U.S. Forest Service (USFS) in Conata Basin may have played a role. Knowledge of how long an introduced species has been established in a region is important. Assessments of a species' invasiveness can be made too soon, for example, thus increasing the likelihood of labeling a potentially invasive species in its lag phase as "safe." Such mistakes are common (IUCN 2002). Lag phases of up to 180 years have been found for herbaceous species (Pyšek & Prach 1993). In Washington State, Class A plants, such as *T. passerina*, are required by law to be given highest priority. Such effort is consistent with the state's purpose that nonnative species whose distribution is still limited are best dealt with by preventing new infestations and eradicating existing ones as soon as possible.

Thymelaea passerina can be difficult to identify. In the field, the plant closely resembles some *Polygonum* species but upon close examination, no ocrea (a papery sheath) is found at the leaf nodes. Spurge flax is the only species in *Thymelaea* and the only herbaceous annual Thymelaeaceae, thus it is absent from many taxonomic keys. Officials in Washington have observed that animals will not graze this plant. Alkaline rangeland and disturbed places are typical of sites where *T. passerina* has been found (USDA NRCS 1999), and such habitats are common to the complex and highly altered Conata Basin ecosystem. Spurge flax is reported to be difficult to control by herbicides due to the lack of surface area of the small, leathery leaves. A KANU specimen label for *T. passerina* (*KANU 298425*, and many duplicates at NEB, collected in 1950) allude to its weediness by indicating the plant had "almost completely taken over a pasture" in the northern part of Cedar County, Nebraska.

CONCLUSION

Thymelaea passerina is clearly established in South Dakota and has the potential for wider naturalization. The 1989 collection introduced a new family, Thymelaeaceae, to the flora of the state. *Thymelaea passerina*, or spurge flax, has proven to be aggressive and difficult to control in other regions. Livestock do not graze the plant, and at Conata Basin, none of the *ca.* 1000 plants observed were noted to have been grazed by prairie dogs. An assertive control program at Conata Basin makes management, and possibly eradication, of spurge flax feasible at this time. Given the relatively isolated geology of Conata Basin, it may be possible to contain the alien and prevent it from spreading. In addition, monitoring by the USFS of the Conata Basin flora would greatly aid in identifying new invasions. A return to the site of the initial 1989 find in Tripp County could also provide valuable information about its persistence and invasive pattern.

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REFERENCES

Great Plains Flora Association. 1986. Flora of the Great Plains. University Press of Kansas, Lawrence.

Harriman, N.A. 1979. Four additions to the Wisconsin flora. Michigan Bot. 18:143–145.

Holmes, W.C., J.F. Pruski, and J.R. Singhurst. 2000. *Thymelaea passerina* (Thymelaeaceae) new to Texas. Sida 19:403–406.

IUCN. 2002. Turning the tide: the eradication of invasive species. Veitch, C.R. and M.N. Cloud, eds. Occasional Paper of the IUCN Species Survival Commission No. 27. Available at: http://www.hear.org/articles/turning-thetide/turningthetide.pdf.

Kaul, R.B., D.M. Sutherland, and S.B. Rolfsmeier. 2006. The flora of Nebraska. University of Nebraska, Lincoln.

McGregor, R.L. 1986. Thymelaeaceae. In: Flora of the Great Plains University Press of Kansas, Lawrence. P. 498.

Mohlenbrock, R.H. and D.M. Ladd. 1978. Distribution of Illinois vascular plants. Southern Illinois University Press, Carbondale.

Pohl, R.W. 1955. *Thymelaea passerina*, a new weed in the United States. Iowa Acad. Sci. 62:152–154.

Pyšek, P. and K. Prach. 1993. Plant invasions and the role of riparian habitats – a comparison of four species alien to central Europe. J. Biogeogr. 20:413–420.

USDA, NRCS. 1999. The PLANTS database (http://plants.ussda.gov/plants) accessed 4/19/2009. National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

Vincent, M.A. and J.W. Thieret. 1987. *Thymelaea passerina* (Thymelaeaceae) in Ohio. Sida 12:75–78.

Webb, D.H., H.R. DeSelm, and W.M. Dennis. 1997. Studies of prairie barrens of northwestern Alabama. Castanea 62:173–184.

Wofford, B.E. and H.R. De Selm. 1988. Distribution of and first report of *Thymelaea passerina* from the southeastern United States. Castanea 53:305–306.